


Mental Health Related Emergency Department Claims for Vermont Children

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Disclosure & Acknowledgement

These analyses, conclusions, and recommendations are solely those of the authors and are not necessarily those of the Green Mountain Care Board.

This presentation is a summary of a major project for the Department of Mental Health by Anita Wade, Vermont's CSTE Applied Epidemiology Fellow 2017-2019.

Context for Project & Background

Context for Project

- Concern about children and youth in mental health (MH) crisis waiting in hospital emergency departments (EDs)
- Lack of data on children in EDs, especially those waiting on voluntary status
- Desire to understand clinical picture to inform:
  - policy / program development for the system of care
  - workforce development needs
- Ultimate goal to reduce use of EDs for MH crisis

Background

- 1 in 6 U.S. children aged 2–8 years (17.4%) were estimated to have a diagnosed mental, behavioral, or developmental disorder in 2016 (Cree, et al., 2018)
- Psychiatric visits accounted for 8-10% of all ED visits, 2011-2015 (Kalb, et al., 2019)
- 28% increase in psychiatric ED visits per 1000 youth between 2011-2015 (Kalb, et al., 2019)
- Emergency Departments are safety nets for people in crisis (Kalb, et al., 2019)
  - Presents many challenges

What does the use of EDs relating to mental health look like in Vermont?

What do we already know?

- Vermont Department of Mental Health (DMH) receives client-based information from Designated Agencies

Served 11,052 children in Fiscal Year 2017

1,170 clients received Emergency/Crisis Assessment, Support and Referral Services

283 clients received Emergency/Crisis Bed Services

2,601Emergency/Crisis Services delivered

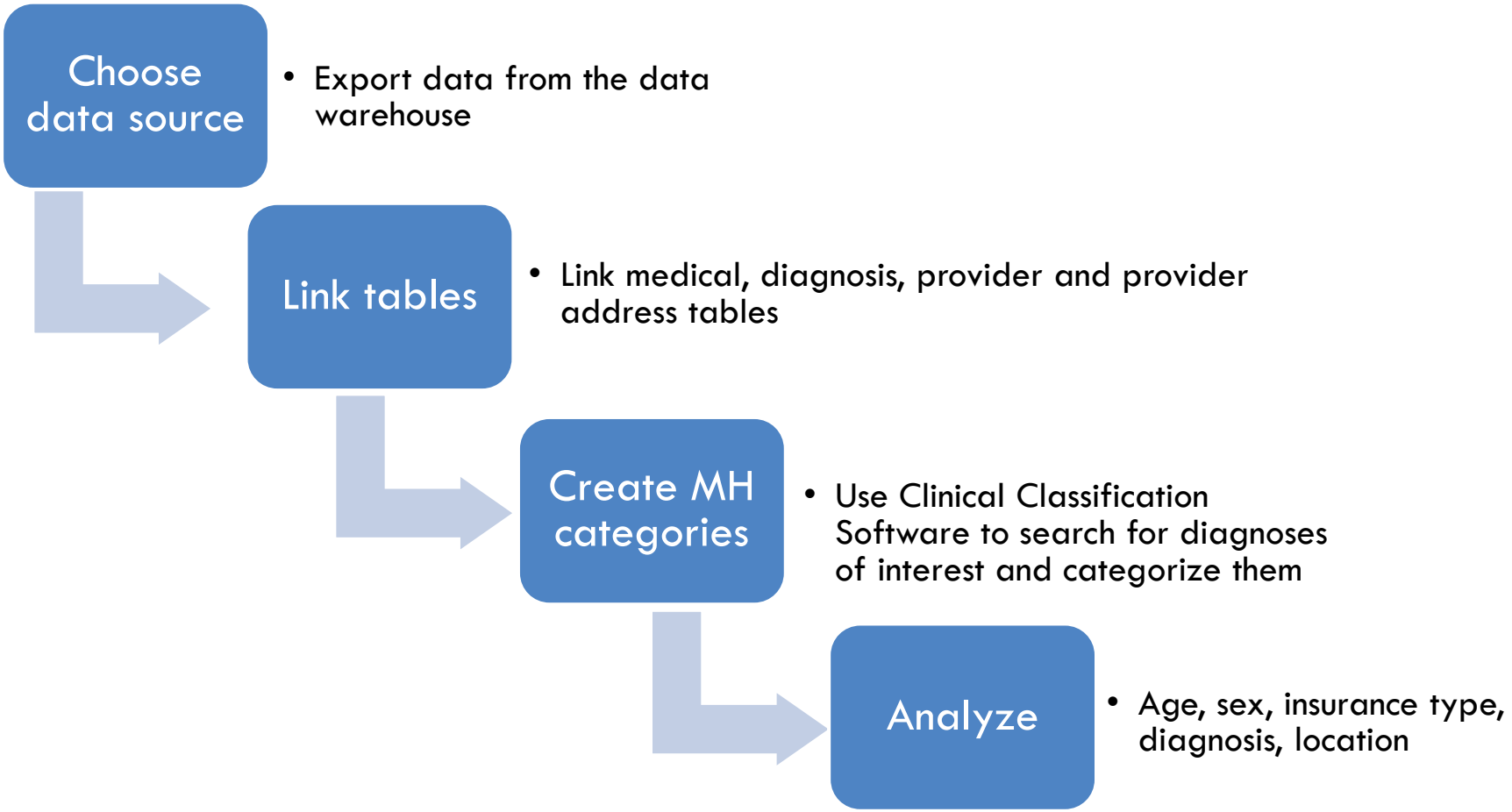
3,307 days of Emergency/Crisis Bed Services delivered

What do we want to know?

- What does the landscape of children's mental health look like on a population level?
  - How frequently are children utilizing EDs for mental health related conditions?
  - What diagnoses are being reported on claims?
- Broader scope
  - What services do we need within the ED?
  - What services do we need before getting to the ED?

Methods

Overview


Choose data source
• Export data from the data warehouse
Link tables
• Link medical, diagnosis, provider and provider address tables
Create MH categories
• Use Clinical Classification Software to search for diagnoses of interest and categorize them
Analyze
• Age, sex, insurance type, diagnosis, location

Choosing the Right Data

Determining Appropriate Data Source

- Vermont data sources that include ED data:
  - All Payer Claims Database
  - Hospital Discharge Data
  - Syndromic Surveillance
  - Medicaid Claims
- Wants and needs for this project:
  - Records for every Vermont child that visited an ED
  - Ability to identify unique children
  - Ability to follow children across multiple years
  - Ability to see multiple diagnoses associated with a visit

And the winner is….

- Vermont's All-Payer Claims Database
  - Vermont Health Care Uniform Reporting and Evaluation System (VHCURES)
  - Owned by Green Mountain Care Board
- Includes claims incurred and paid dates:
  01/01/2007 – 09/30/2017

VHCURES: The Pros and Cons

Pros

- ☑ Claims for a majority* of children that visited an ED
- ☑ Ability to identify unique children
- ☑ Ability to follow child longitudinally
- ☑ Ability to see multiple diagnoses

Cons

- ☐ Policy change for who is required to submit data to VHCURES resulted in loss of data
- ☐ Limitations of claims data
- ☐ No time of admission to the ED
- ☐ Complicated layout
  - 20 data tables
  - 59+ reference tables

Inclusion Criteria

- Primary, facility claims
  - Vermont residents
  - Under the age of 18
  - Visited an ED in VT or NH
- Flag variables
  - Emergency room ='Yes'
    - Revenue code in 0450-0459
    - Place of service code = ER
    - Procedure code in 99281-99289
  - Denied claim = 'No'

Creating Mental Health Categories

International Classification of Diseases (ICD)

- Needed ICD-9-CM and ICD-10-CM categories
- Researched categorization methods
  - Reported in the literature
  - Previous surveillance indicator categories
  - Faces of Medicaid
  - Clinical Classification Software (CCS)
    - ICD-9-CM = Multi-level CCS 2015
    - ICD-10-CM= Beta Multi-level CCS 2019.1

CCS Mental Health Categories

- Adjustment Disorders
- Anxiety Disorders
- Attention Deficit, Conduct and Disruptive Behavior Disorders
- Delirium, Dementia and Amnestic and Other Cognitive Disorders
- Developmental Disorders
- Disorders Usually Diagnosed In Infancy Childhood or Adolescence
- Impulse Control Disorders not Elsewhere Classified
- Mood Disorders
- Personality Disorders
- Schizophrenia and Other Psychotic Disorders
- Alcohol-related Disorders
- Substance-related Disorders
- Suicide and Intentional Self-inflicted Injury
- Screening and History of Mental Health and Substance Abuse Codes
- Miscellaneous Mental Health Disorders

Things to Keep in Mind

Caveats of VHCURES Data

- October 1st, 2015
  - Switch from ICD-9-CM to ICD-10-CM
- Spring 2016
  - Court case resulted in a reduction of who is required to submit data
  - "Gobeille Decision"
- September 30th, 2017
  - End of data to which VDH has access

Caveats of VHCURES Data … Impact of ICD-9-CM transition to ICD-10-CM

ICD-9-CM

5.13 Suicide and intentional self-inflicted injury

E9500, E9501, E9502, E9503, E9504, E9505, E9506, E9507, E9508, E9509, E9510, E9511, E9518, E9520, E9521, E9528, E9529, E9530, E9531, E9538, E9539, E954 , E9550, E9551, E9552, E9553, E9554, E9555, E9556, E9557, E9559, E956 , E9570, E9571, E9572, E9579, E9580, E9581, E9582, E9583, E9584, E9585, E9586, E9587, E9588, E9589, E959 , V6284

ICD-10-CM

5.13 Suicide and intentional self-inflicted injury

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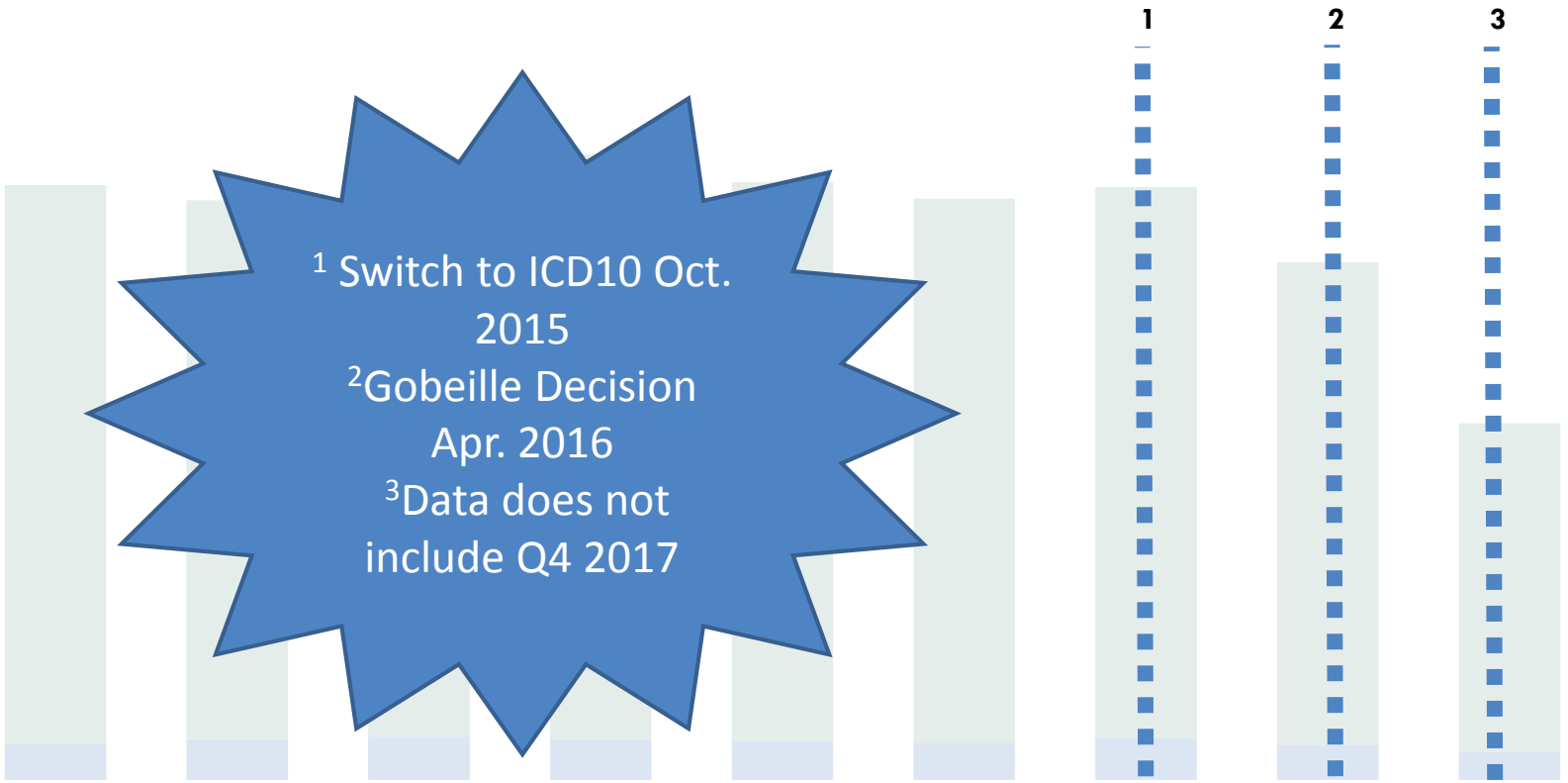
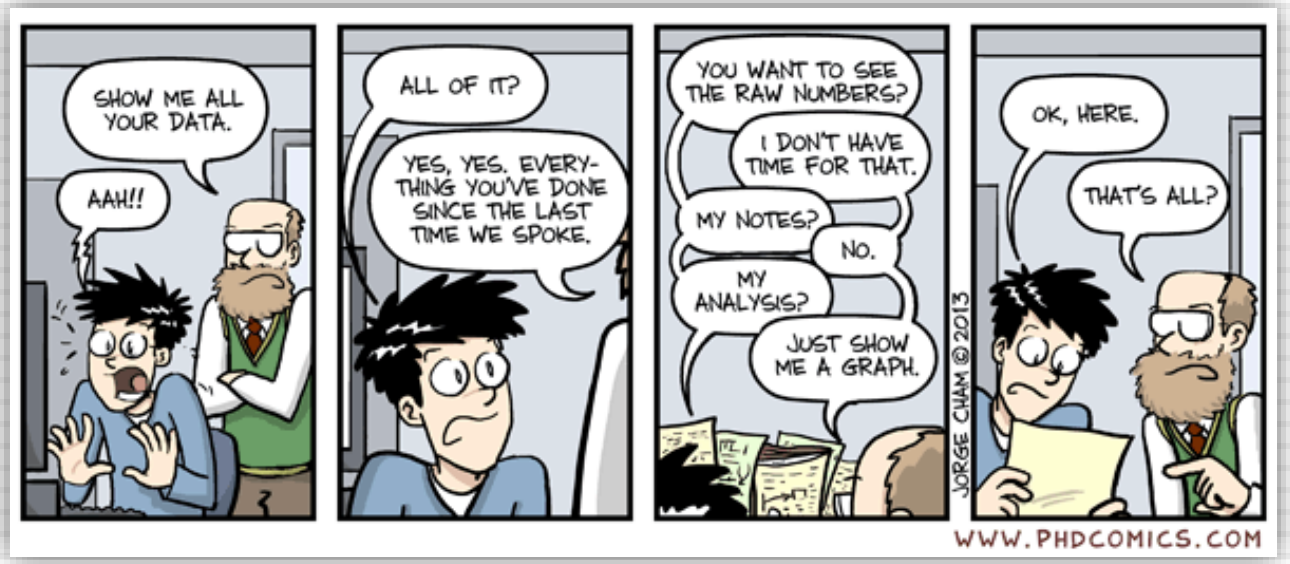
Caveats of Using VHCURES … Impact of caveats on 2015, 2016 and 2017 data

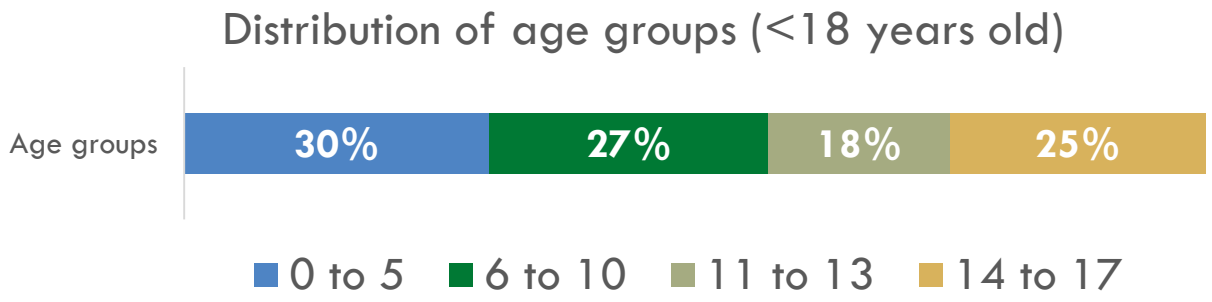


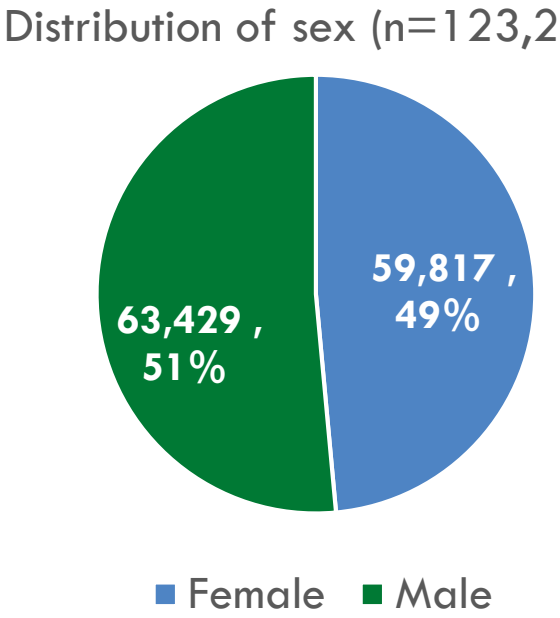
Results


SHOW ME ALL YOUR DATA.
AAH!!
ALL OF IT?
YES, YES. EVERY-THING YOU'VE DONE SINCE THE LAST TIME WE SPOKE.
YOU WANT TO SEE THE RAW NUMBERS?
I DON'T HAVE TIME FOR THAT.
MY NOTES?
NO.
MY ANALYSIS?
JUST SHOW ME A GRAPH.
OK, HERE.
THAT'S ALL?
JORGE CHAM © 2013
WWW.PHDCOMICS.COM

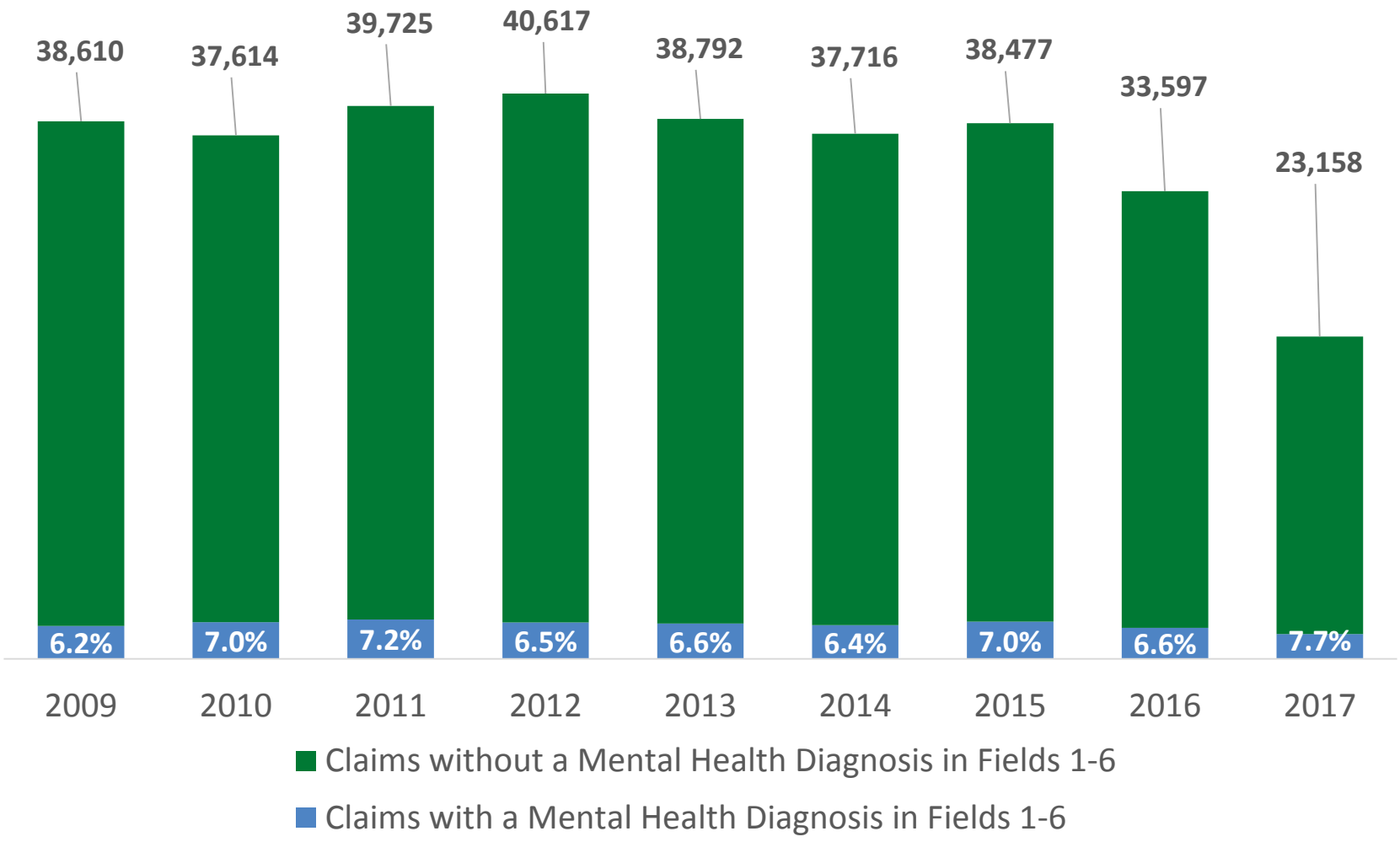
Vermont Pediatric Population

- Average population in Vermont from 2009-2017 = 625,609
- Population under the age of 18 = 123,246 **Range** (116,825-130,450)





How many ED claims were submitted to VHCURES each year?



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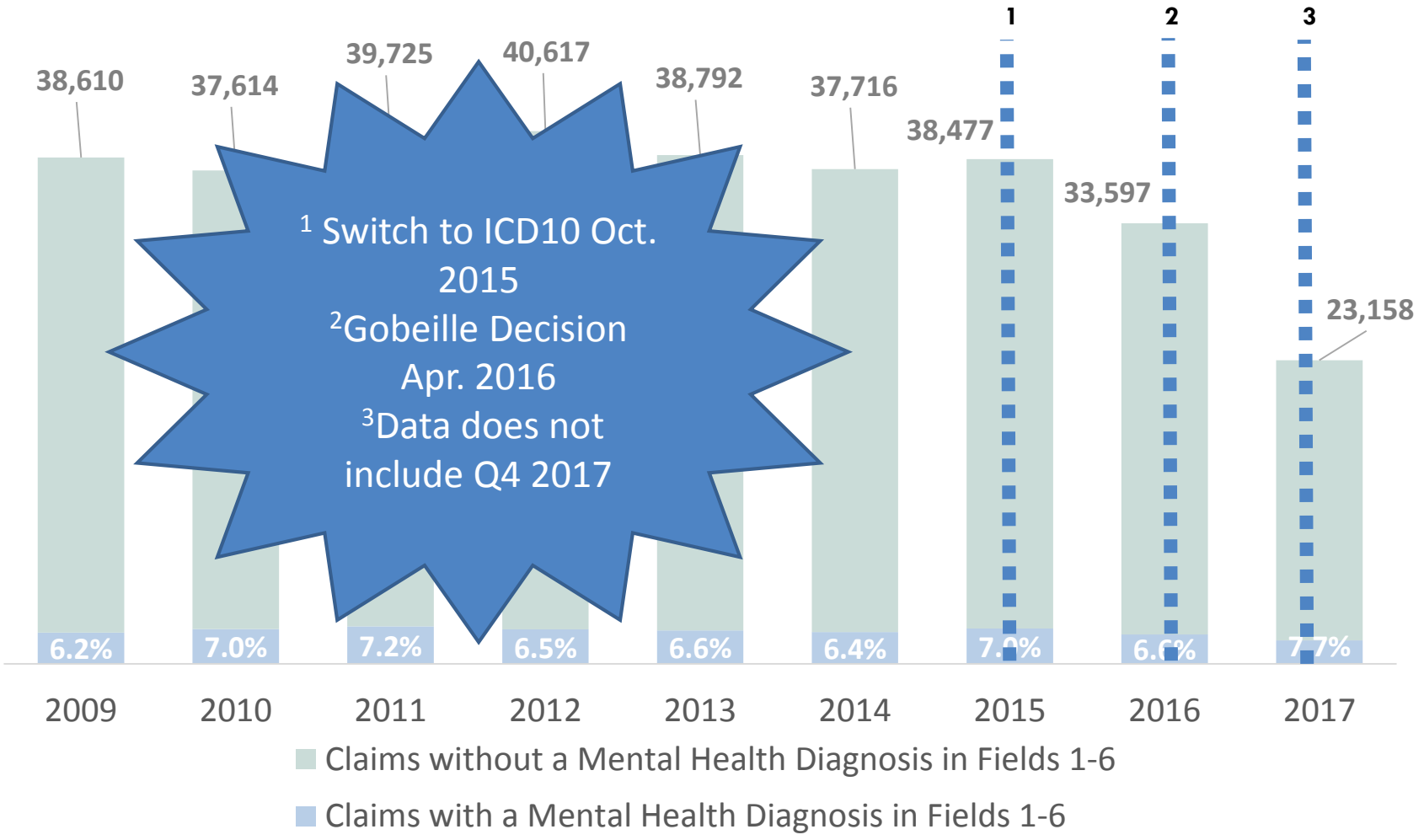
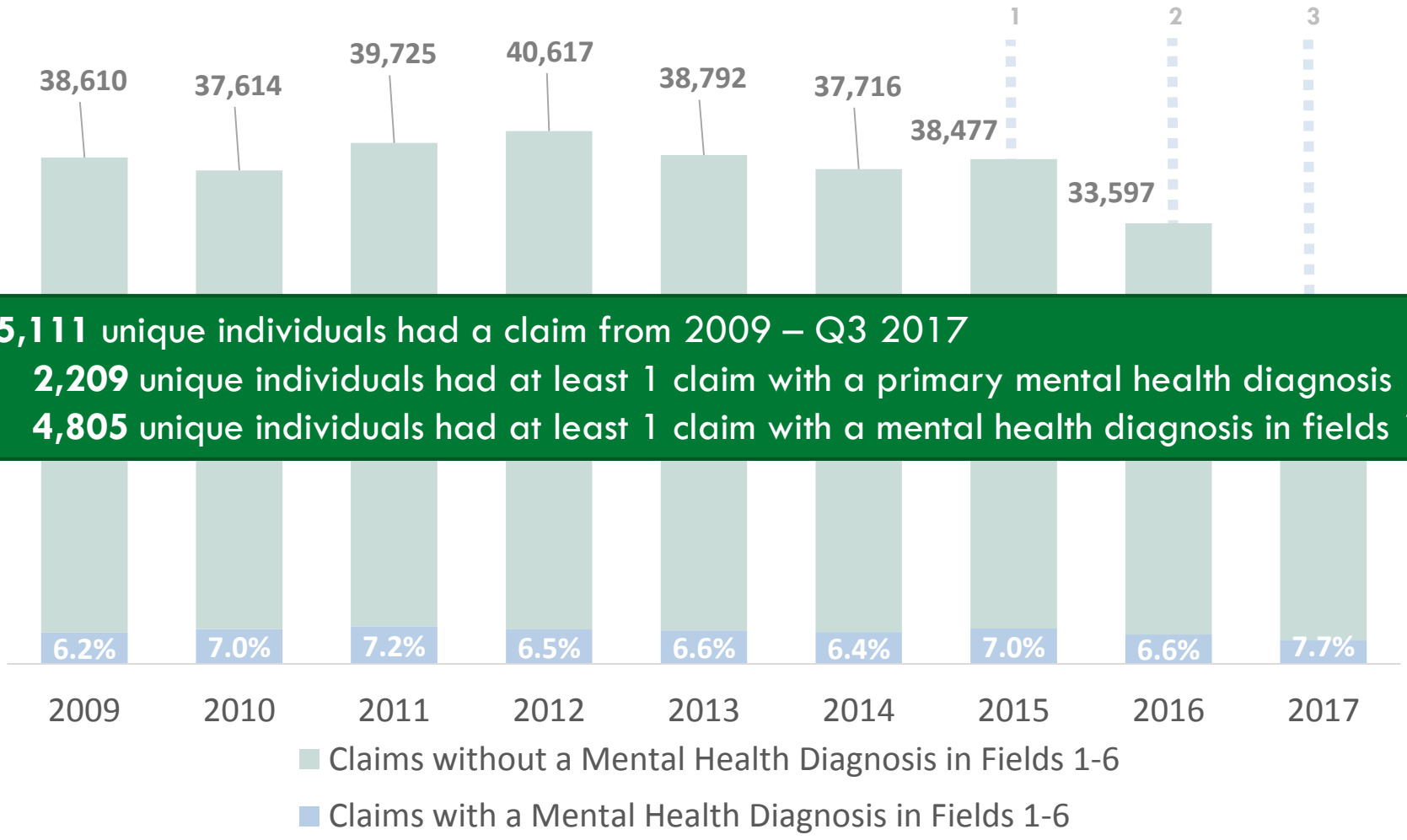
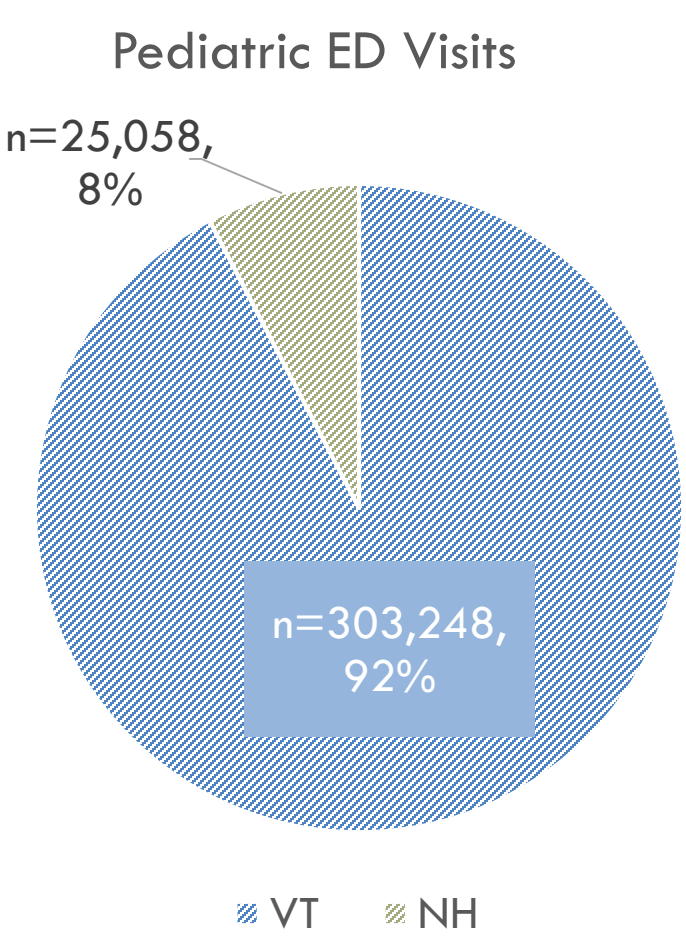


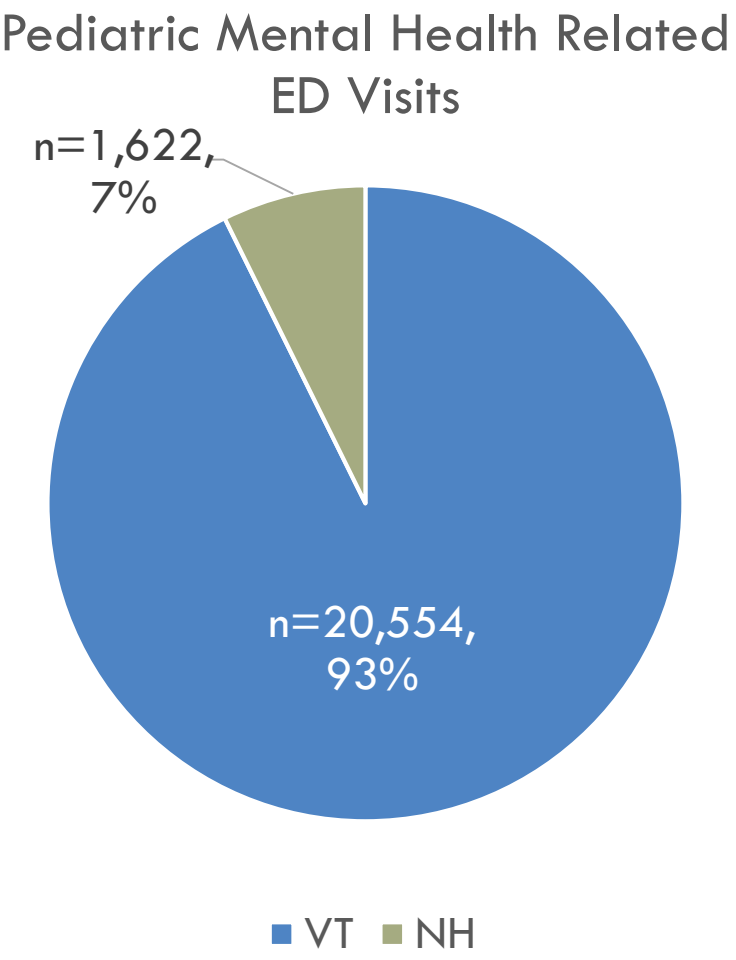
How many ED claims were submitted to VHCURES each year?



- **105,111** unique individuals had a claim from 2009 – Q3 2017
  - **2,209** unique individuals had at least 1 claim with a primary mental health diagnosis
  - **4,805** unique individuals had at least 1 claim with a mental health diagnosis in fields 1-6

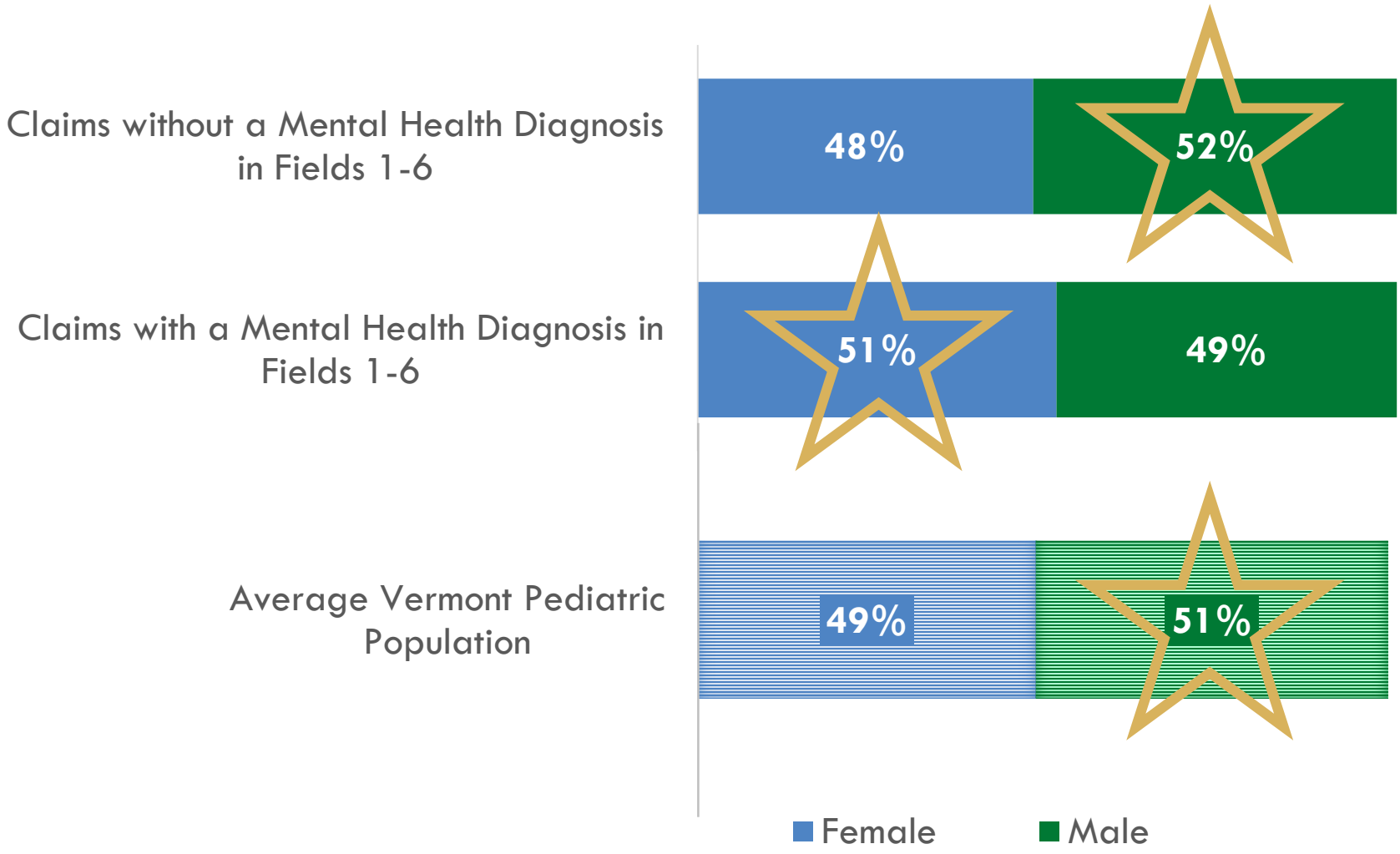
In what state were services provided?



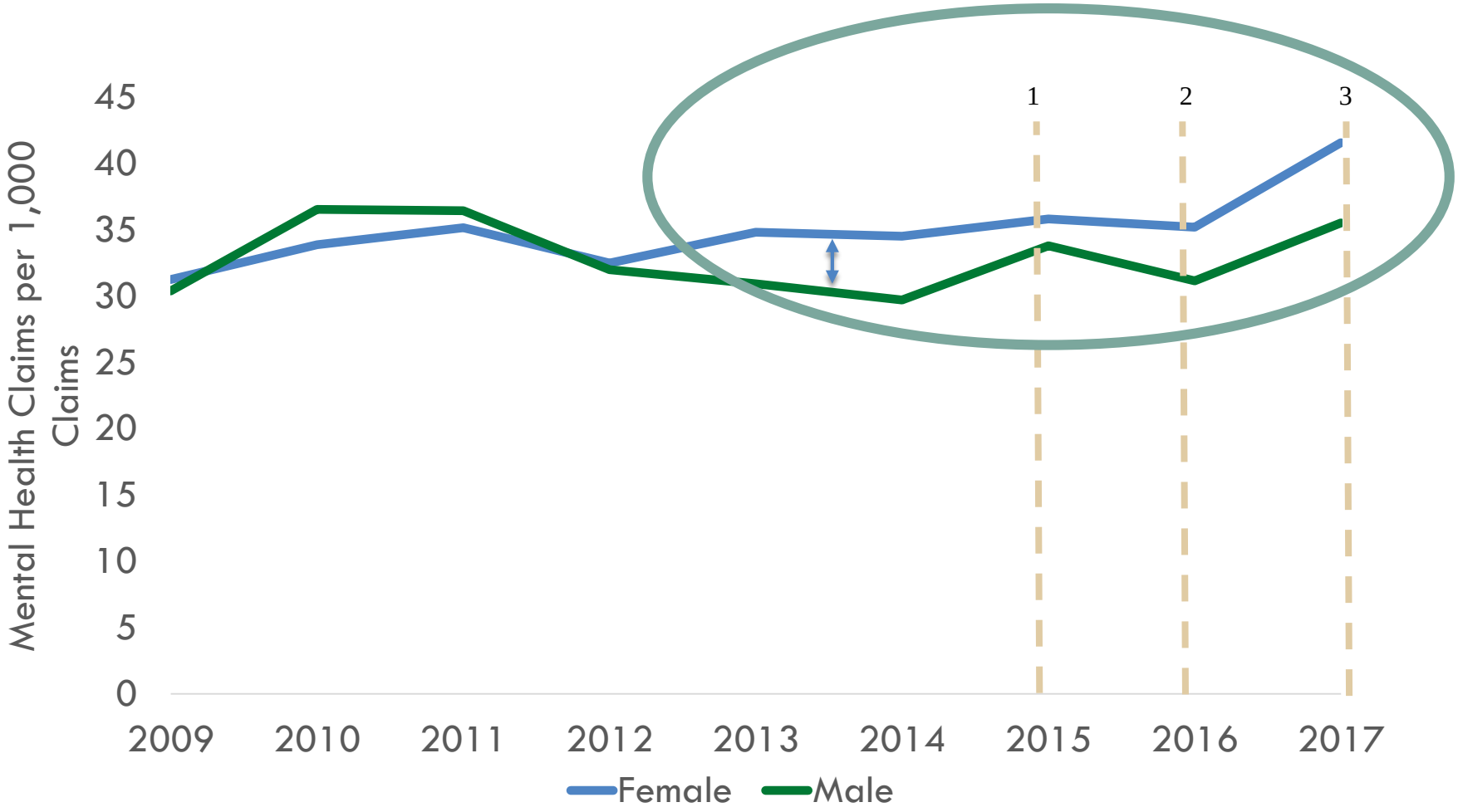


- Diagnosis fields 1-6 were searched for a mental health related diagnosis code

Sex Distribution, Pediatric Emergency Department Claims, 2009 – Q3 2017

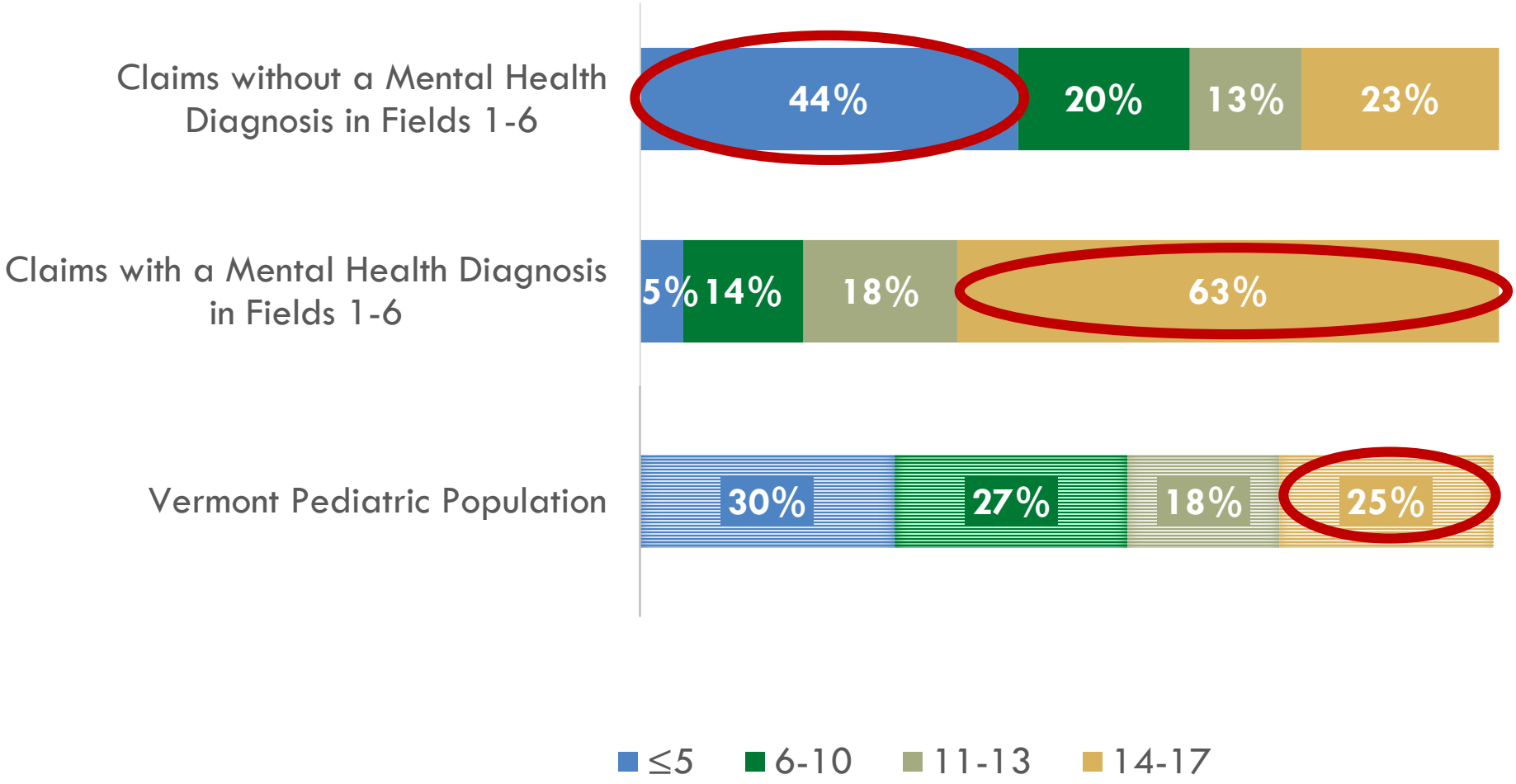


Rate of Pediatric Mental Health Related Emergency Department Claims by Sex

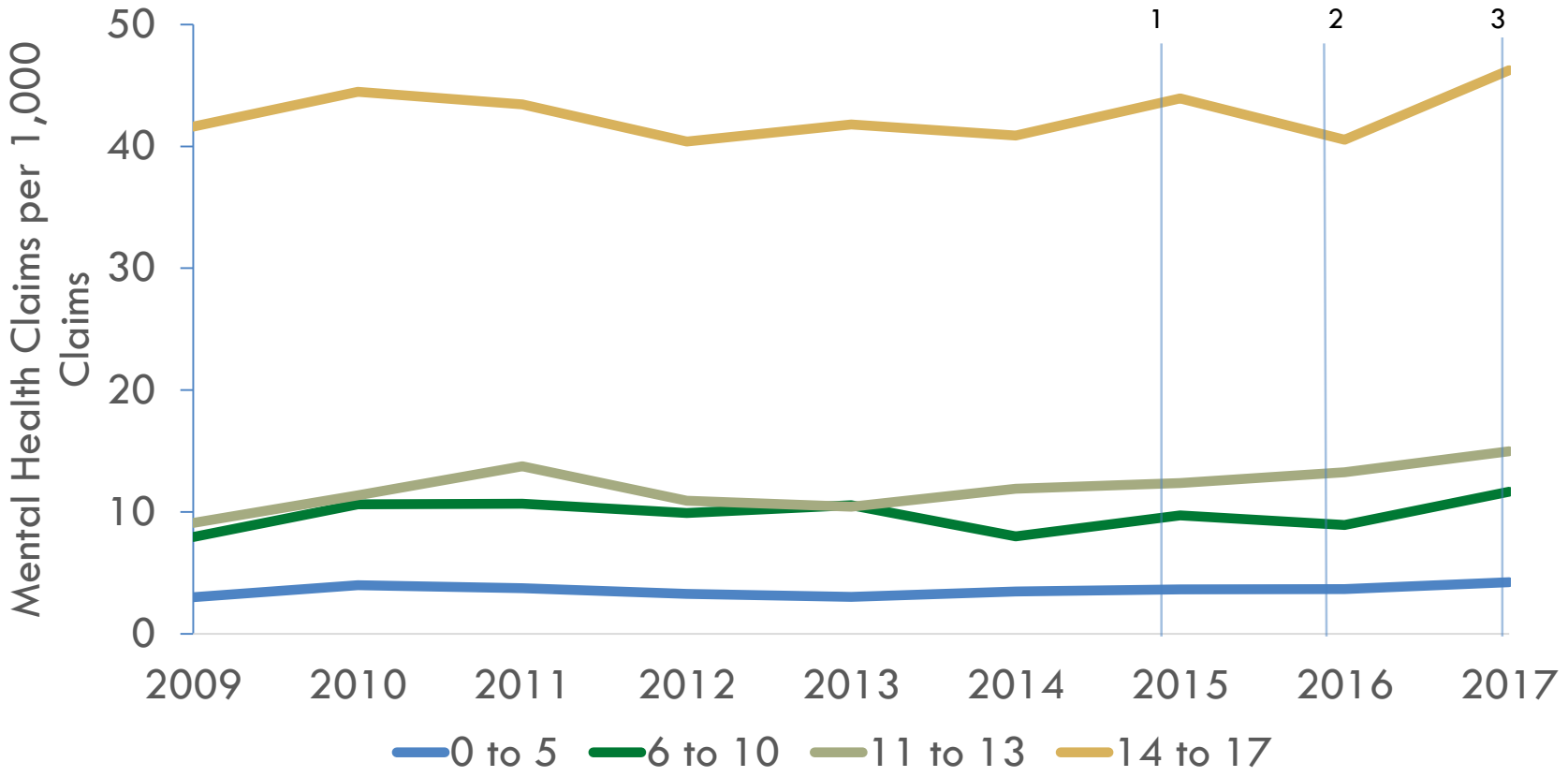


- Diagnosis fields 1-6 were searched for a mental health related diagnosis code

Age Distribution, Pediatric Emergency Department Claims, 2009 – Q3 2017

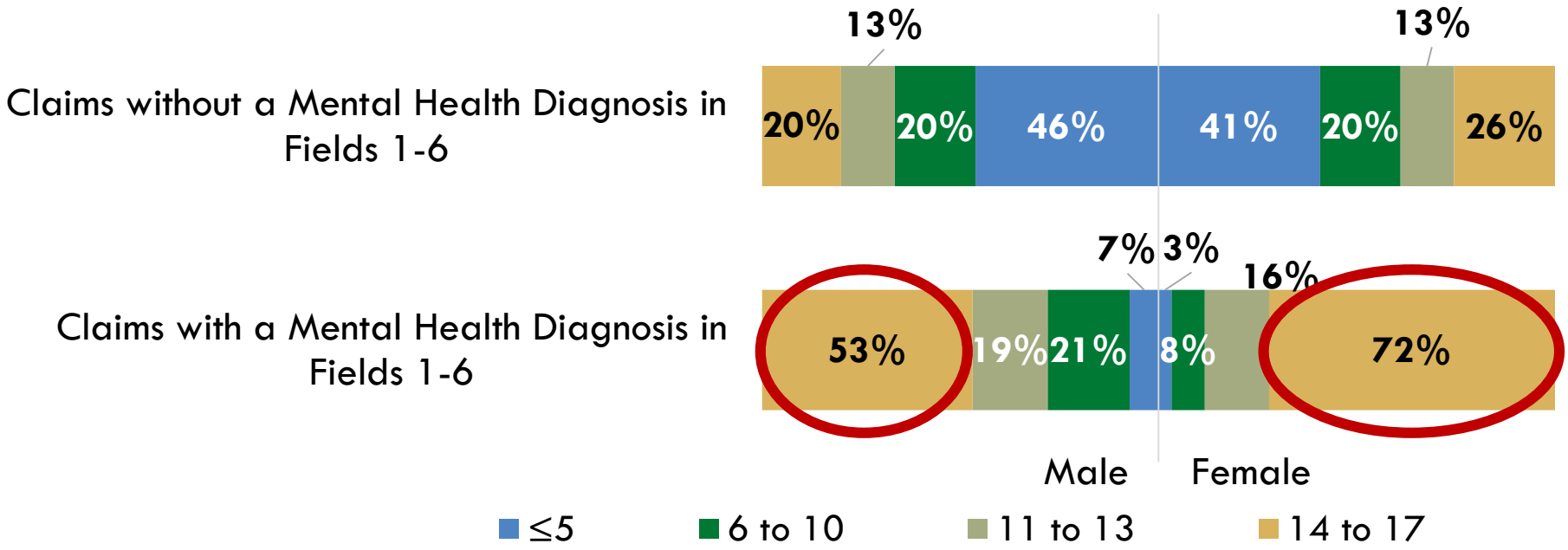


Rate of Pediatric Mental Health Related Emergency Department Claims by Age Group

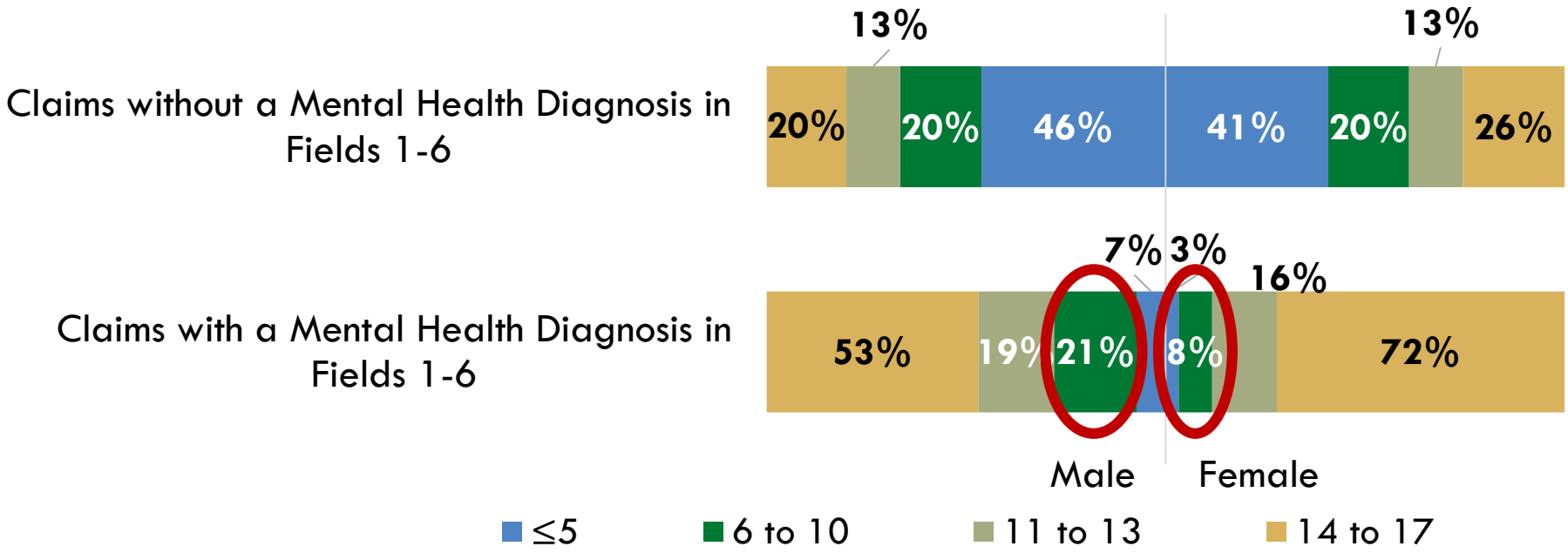


- Diagnosis fields 1-6 were searched for a mental health related diagnosis code

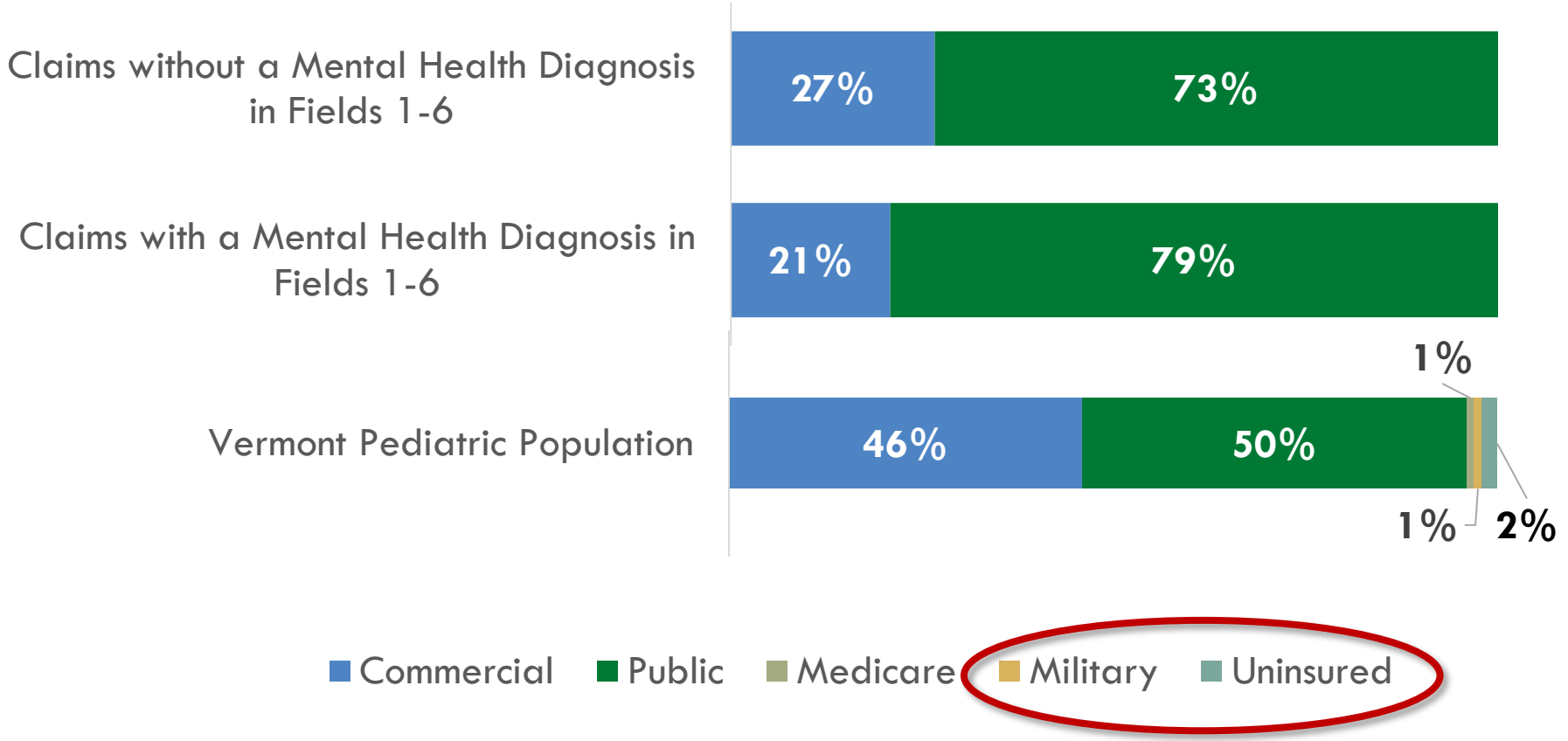
Age and Sex, Pediatric Emergency Department Claims, 2009 – Q3 2017



Age and Sex, Pediatric Emergency Department Claims, 2009 – Q3 2017

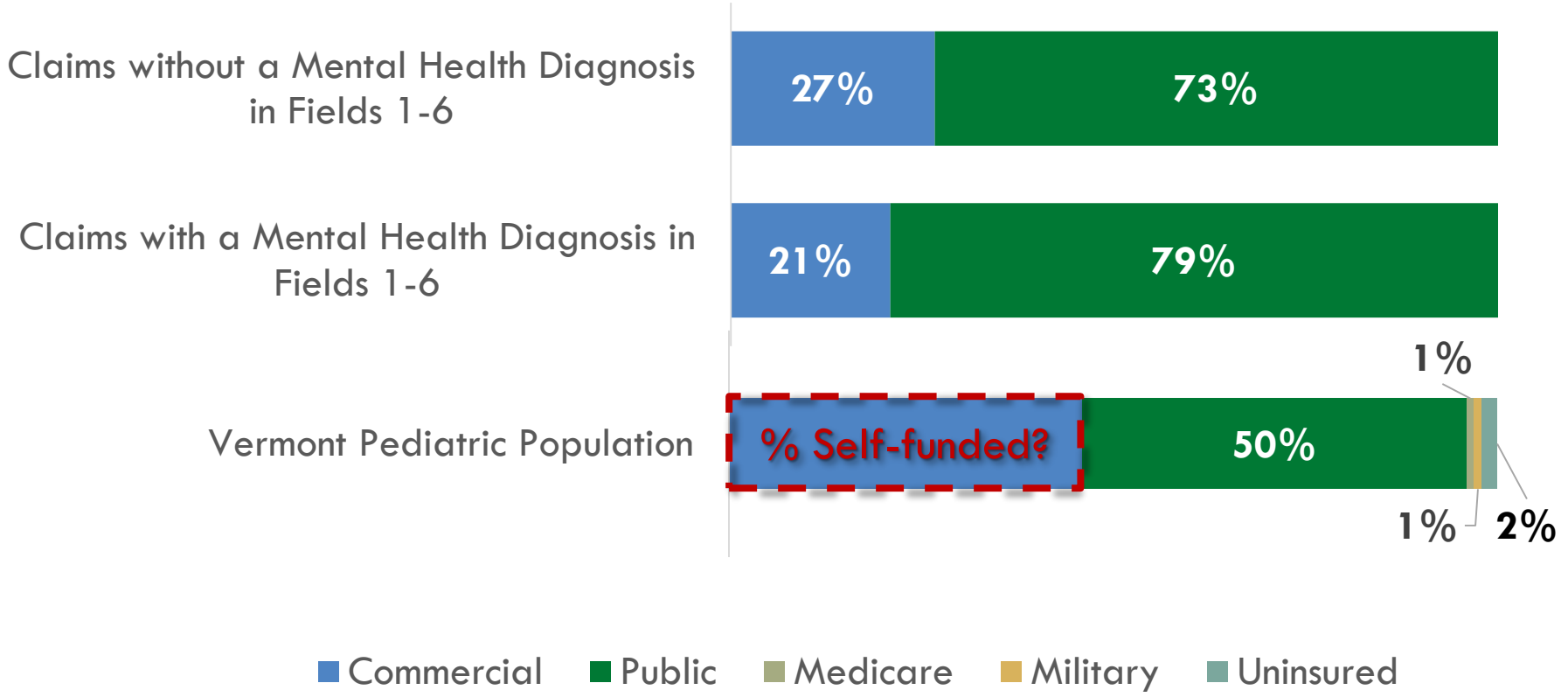


Distribution of Insurance Type for Pediatric Emergency Department Claims, 2009 – Q3 2017



Source for VT Pediatric Population: Vermont Household Insurance Survey: 2018 Report

Distribution of Insurance Type for Pediatric Emergency Department Claims, 2009 – Q3 2017



Vermont Household Insurance Survey: 2018 Report

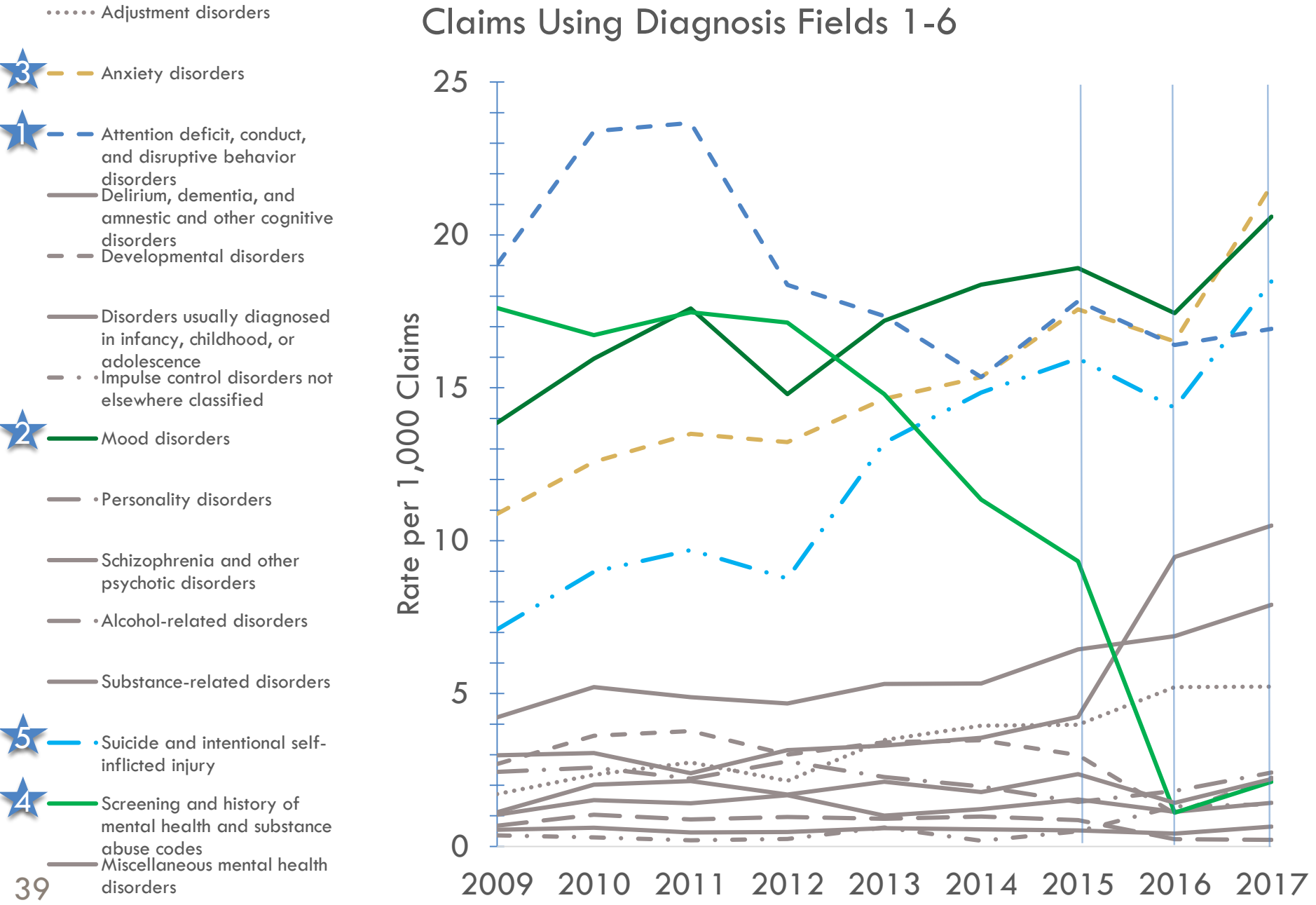
- Self-reported
- Weighted data from 3,002 households (n=7,193 Vermonters)

Mental Health Claims by Category

Top 5 Mental Health Categories, 2009 - Q3 2017

	Primary Diagnosis	Percent	Diagnosis Fields 1-6	Percent
1	Mood disorders	29%	Attention deficit, conduct, and disruptive behavior disorders	28%
2	Anxiety disorders	17%	Mood disorders	25%
3	Attention deficit, conduct, and disruptive behavior disorders	14%	Anxiety disorders	22%
4	Suicide and intentional self-inflicted injury	10%	Screening and history of mental health and substance abuse codes	19%
5	Adjustment disorders	8%	Suicide and intentional self-inflicted injury	18%

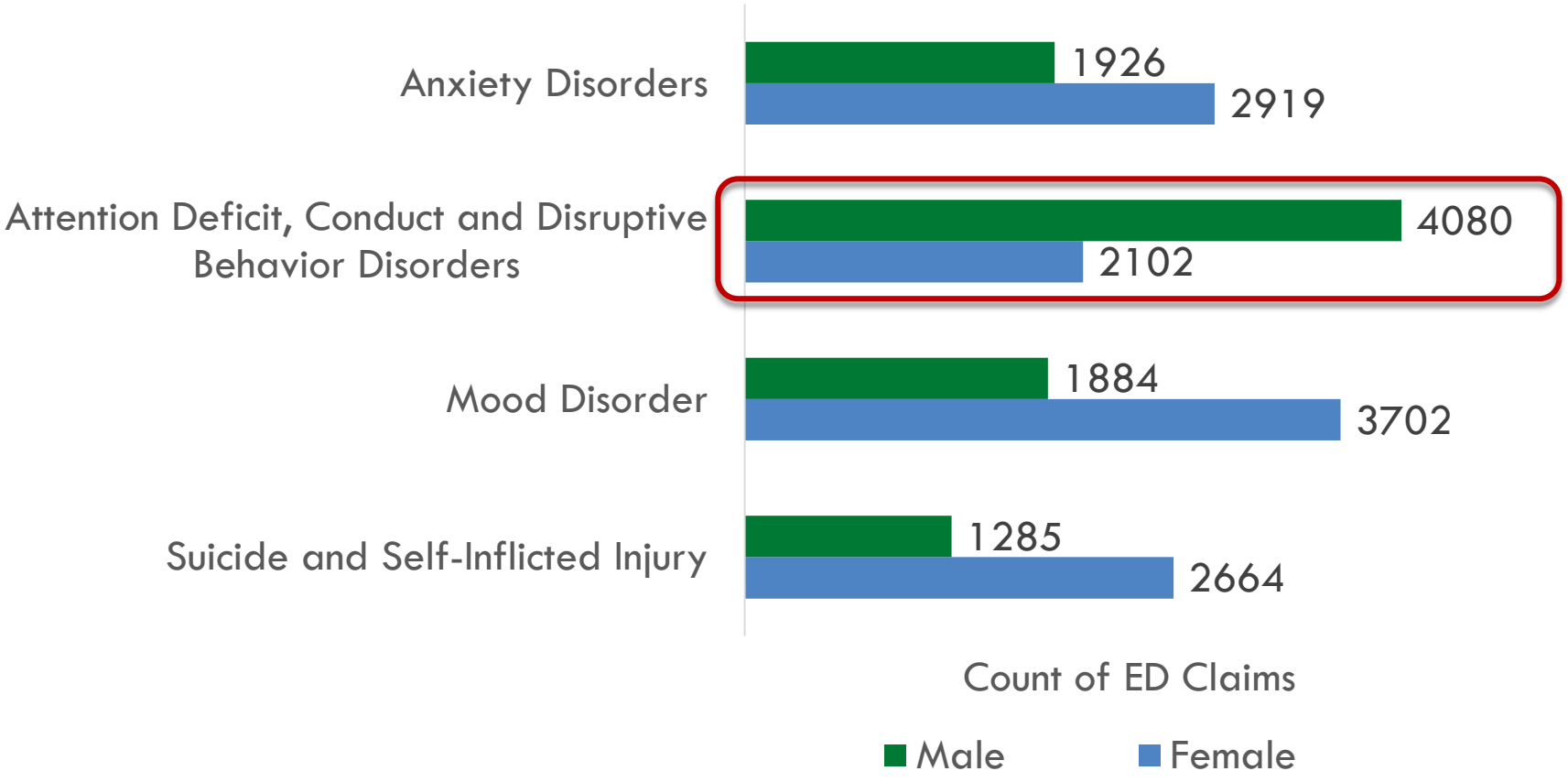
Rate of Pediatric Mental Health Related Emergency Department Claims Using Diagnosis Fields 1-6



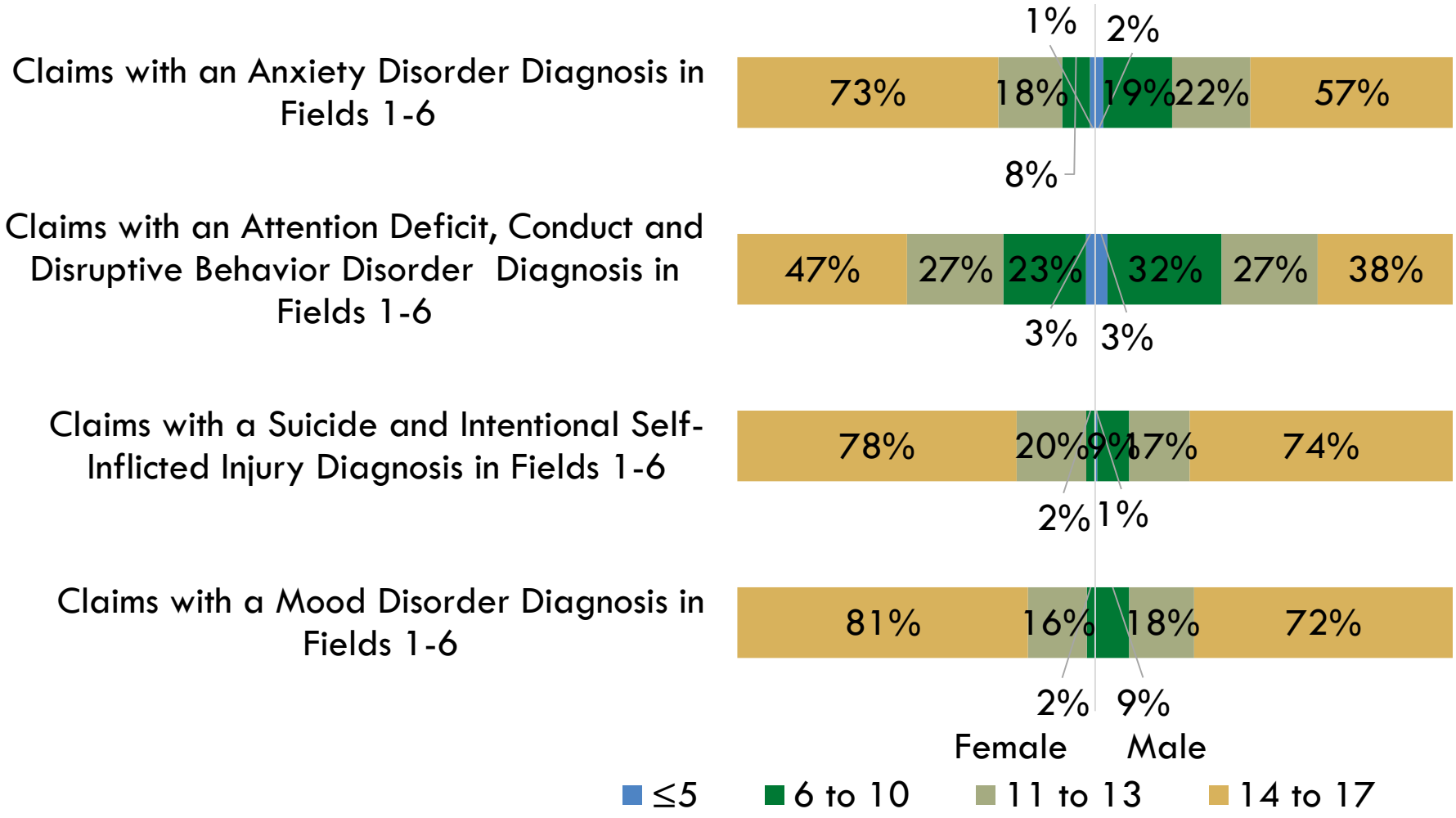
Specific Mental Health Categories

https://tenor.com/view/almost-there-almost-gif-6009178

Count of Pediatric Mental Health Related Emergency Department Claims by Sex

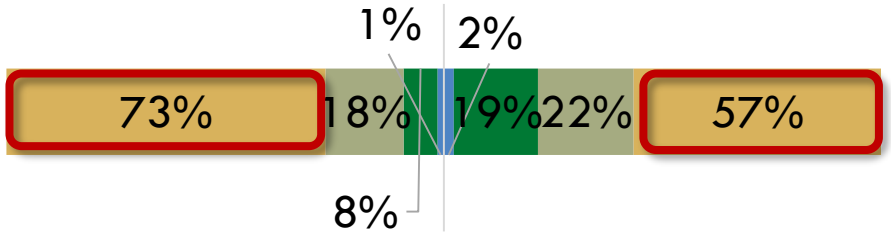


Distribution of Pediatric Mental Health Related Emergency Department Claims by Age and Sex



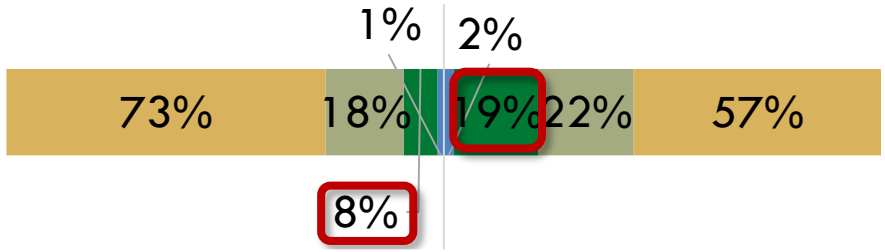
Distribution of Claims by Age and Sex: Anxiety

Claims with an Anxiety Disorder Diagnosis in Fields 1-6



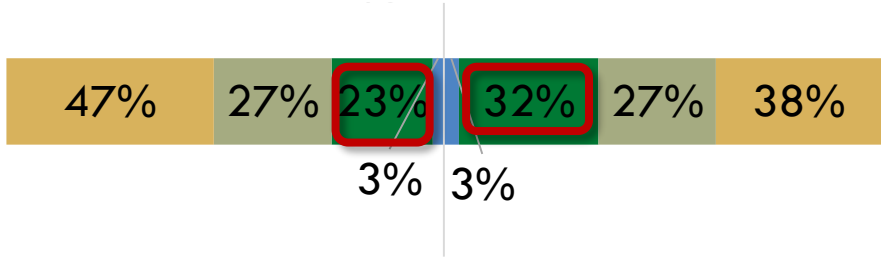
Distribution of Claims by Age and Sex: Anxiety

Claims with an Anxiety Disorder Diagnosis in Fields 1-6



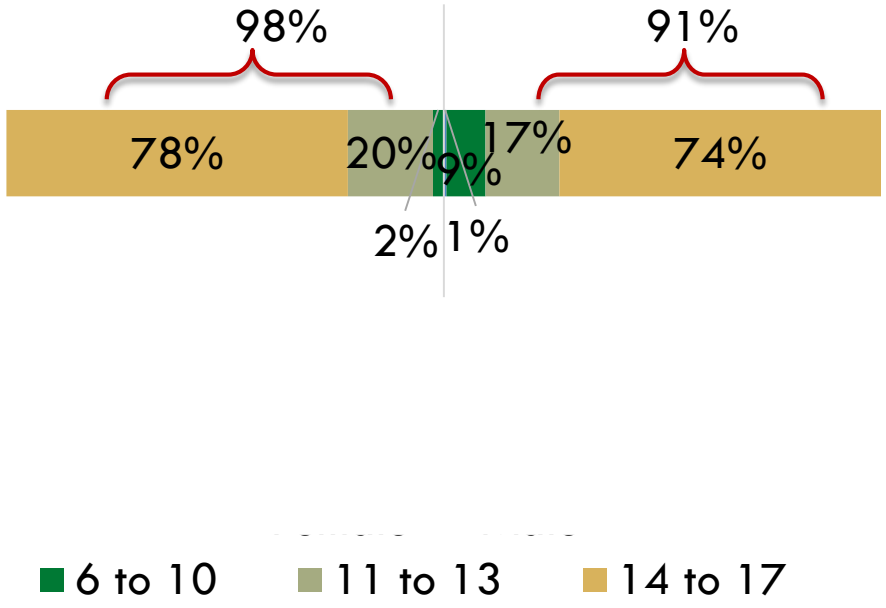
Distribution of Claims by Age and Sex: Attention Deficit, Conduct & Disruptive Behavior

Claims with an Attention Deficit, Conduct and Disruptive Behavior Disorder Diagnosis in Fields 1-6



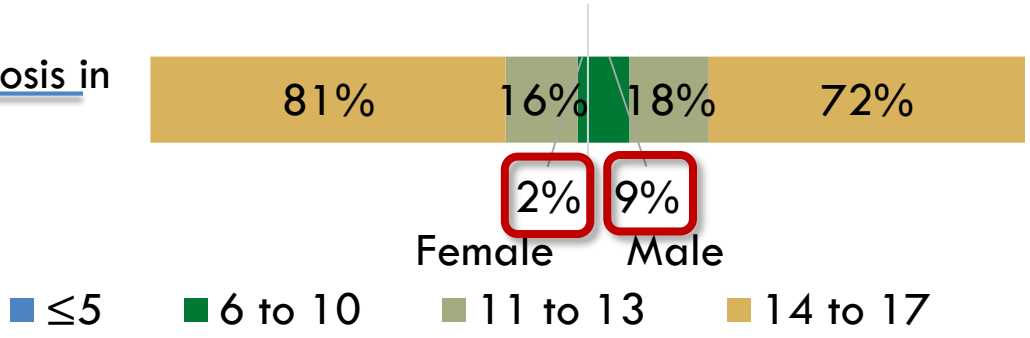
Distribution of Claims by Age and Sex: Suicide & Self-Harm

Claims with a Suicide and Intentional Self-Inflicted Injury Diagnosis in Fields 1-6



Distribution of Claims by Age and Sex: Mood Disorders

Claims with a Mood Disorder Diagnosis in Fields 1-6



Summary

Key Highlights from VHCURES, 2009-Q3 2017

- 22,000+ Claims related to MH using diagnosis fields 1-6
  - 6.8% of ED Claims
  - 4,000+ Unique Children
- MH claims were:
  - 79% Public Insurance*
  - 51% for females
  - 63% for 14 – 17 years
- Distribution of age groups differed by sex of child
- Top 3 MH categories:
  - Mood disorders
  - Anxiety disorders
  - Attention deficit, conduct, and disruptive behavior disorders

Summary

Final Thoughts

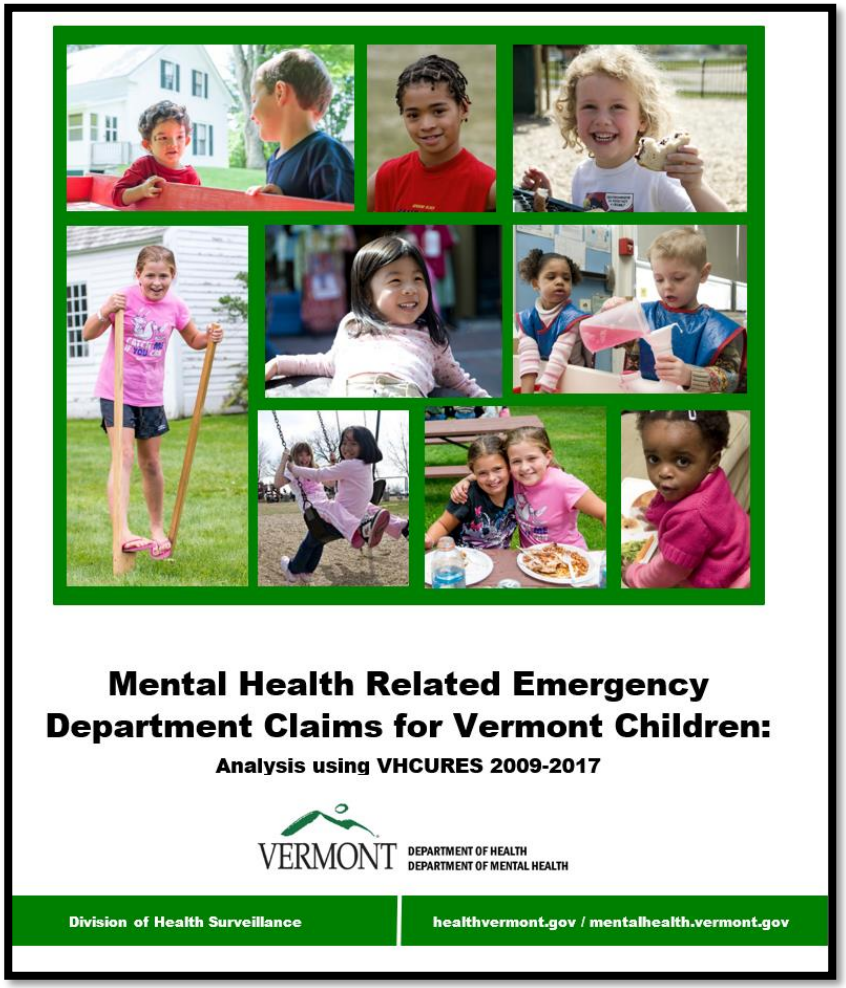
- The general proportion of claims related to mental health was consistent over time (6.2-7.7%)
- Counts of specific mental health categories varied over time

Limitations

- Claims data
- Caveats of the last 3 years of data
  - ICD-9 to ICD-10 transition
  - Loosing self-funded enrollees
- Using Beta version of CCS for ICD-10

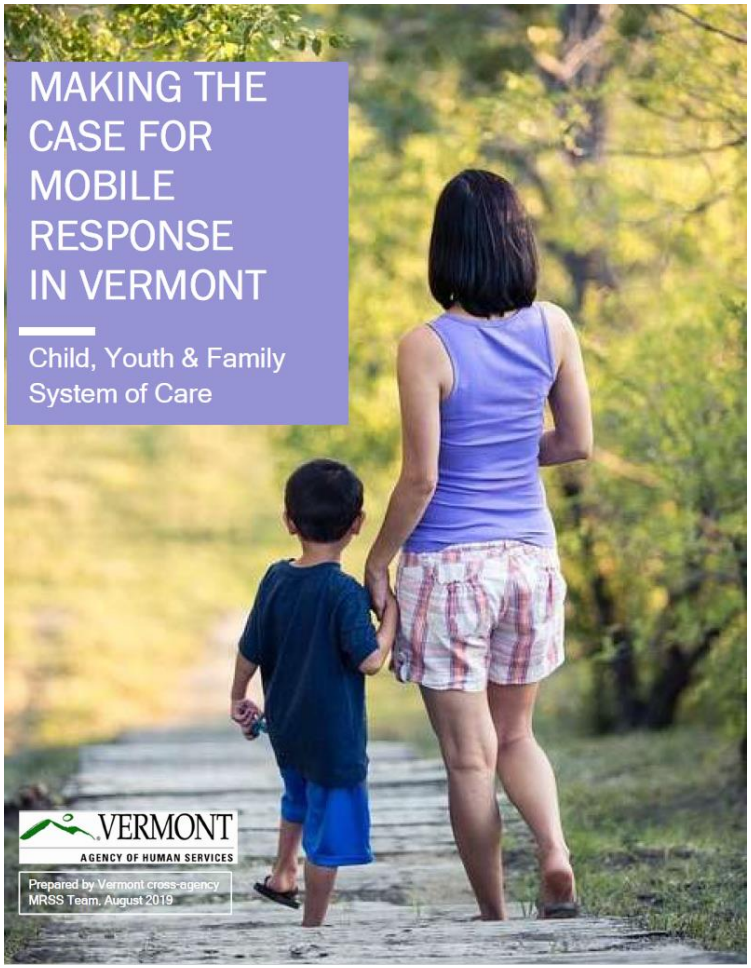
Future Considerations

- Raises many more questions
  - Readmission
  - Geographic location of patient
  - Procedure codes
  - Comparison with other VT data sources…
- Policy & practice implications



Policy and Practice Implications

- Understand scope of problem beyond anecdotal experience
- Informs workforce development/ training on specific practices to address clinical presentation of youth (e.g., DBT)
- Mobile Response and Stabilization Services (MRSS) proposal



Better outcomes in both cost and quality of care are achievable through community-based initiatives that redefine the meaning of "crisis" and address and stabilize behaviors prior to escalation to the level of requiring inpatient care.

~SAMHSA

The Need for Mobile Response and Stabilization Services (MRSS) in Vermont: From Reactive to Responsive

Why Mobile Response and Why Now?

In Vermont, we would like to take a proactive approach rather than waiting for a tragedy to drive system change. We know we are not immune to tragedy and we need to have the right resources in place to do all we can to reduce the likelihood of one happening in our state.

Other states instituted Mobile Response and Stabilization Services in response to a major tragedy such as a school shooting or pending legal action under EPSDT.

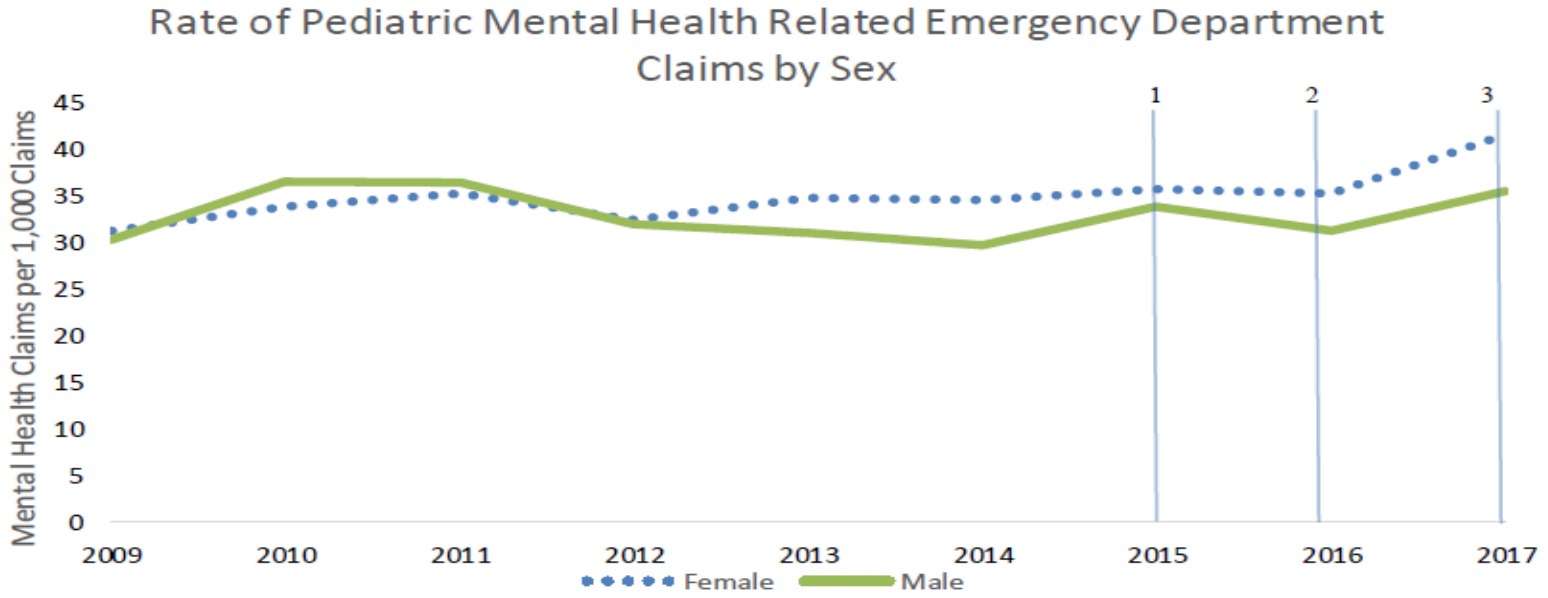


Figure 4: Rate of mental health related claims per 1,000 emergency department claims by sex. Diagnosis fields 1-6 were searched for a mental health related diagnosis code. Claims restricted to Vermont children under the age of 18 that visited an emergency department in Vermont or New Hampshire.

Source: *Vermont Health Care Uniform Reporting and Evaluation System (VHCURES)*

How is MRSS different than traditional crisis services?

- Mobile Response and Stabilization Services provide more **upstream services.**
- A mobile face-to-face response is provided to a **family-defined crisis** to provide support and intervention for a child/youth and their family, **before** emotional and behavioral difficulties escalate.

Core Components of MRSS

- Crisis is defined by the caller, not the provider – a "Just Go!" approach
- Face-to-face mobile response to location preferred by the family
- On-site/in-home assessment, de-escalation, crisis planning, resource referral
- Brief follow up stabilization services, case management
- MRSS Team consists of:
  - Team coordinator/ clinical director
  - Licensed or license-eligible clinician
  - Behavioral Specialist or Family Peer Services Worker
  - Access to a psychiatrist or APRN under the supervision of a psychiatrist
- Centralized Call Center (strongly recommended)
- Data tracking and performance measurement reporting

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- Project design, subject matter expertise and support
  - Dr. Laurin Kasehagen, CDC/VDH/VDMH and Dr. Patsy Kelso, VDH
  - Laurel Omland, VDMH and Dr. David Rettew, VDMH/UVM
  - Dr. Abigail Crocker, UVM/VDH
  - The Child, Adolescent and Family Unit at VDMH!
- Anita Wade, 2017-2019 CSTE Applied Epidemiology Fellow
- This study/report was supported in part by an appointment to the Applied Epidemiology Fellowship Program administered by the Council of State and Territorial Epidemiologists (CSTE) and funded by the Centers for Disease Control and Prevention (CDC) Cooperative Agreement Number 1U38OT000143-05.

Thank you!

VERMONT
DEPARTMENT OF HEALTH

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